

Abstract of the Disclosure

A bismuth titanium silicon oxide having a pyrochlore phase, a thin film formed of the bismuth titanium silicon oxide, a method for forming the bismuth-titanium-silicon oxide thin film, a capacitor and a transistor for a semiconductor device including the bismuth-titanium-silicon oxide thin film, and an electronic device employing the capacitor and/or the transistor are provided. The bismuth titanium silicon oxide has good dielectric properties and is thermally and chemically stable. The bismuth-titanium-silicon oxide thin film can be effectively used as a dielectric film of a capacitor or as a gate dielectric film of a transistor in a semiconductor device. Various electronic devices having good electrical properties can be manufactured using the capacitor and/or the transistor having the bismuth-titanium-silicon oxide film.